The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

BOUVERIE HOUSE, 154, FLEET STREET, LONDON, E.C.4

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THE CHEMICAL AGE offices are closed on Saturdays in accordance with the adoption of the five-day week by Benn Brothers, Limited

VOL. XLII. NO. 1,081 — March 16, 1940 — Annual Subscription, 21s. Overseas, 26s.

The Case Against More Taxation

THE estimates of Government expenditure during the next financial year are now appearing. They tell us little, as in accordance with war-time practice token votes in hundreds may mean the pouring out of millions. What is certain is that the national bill is mounting rapidly with every day that passes. The last official statement was that the Government are spending at the rate of approximately £6,000,000 a day. It is held to be not impossible that if the war is at all prolonged that figure may rise to the neighbourhood of £10,000,000 a day.

How are these colossal sums to be found? Sir John Simon in his first war Budget raised the income tax to 7s. in the pound, the highest figure it has ever reached in this country. The industrial and commercial world has now felt the full blast of the new burden. It has paid this tribute as cheerfully as possible in loyal support of the national effort. But it would be absurd to deny that taxation on this scale comes dangerously near the point where businesses cease being remunerative and accordingly fail to make any contribution at all to the Exchequer. Personal incomes in the highest grades actually pay as much as 17s. 6d. in the pound in direct taxation. Businesses are not bled in the same way, but income tax at 7s. in the pound is not the whole story for them. They have also to meet the National Defence Contribution or the Excess Profits Tax, and, with the compulsory insurance of stock and other Government charges, the toll on them may be as much as 10s. in the pound.

It is natural, and indeed inevitable, to compare the present war effort with that of 1914-18. Then war was entered into with the income tax at 1s. 6d. Mr. Lloyd George promptly doubled it, and by the end of the war it had reached a peak figure of 6s. We began the present conflict with an income tax of 5s. 6d. in the pound, and although an immediate increase to 7s. was accepted as a stern necessity it was widely felt that this was the limit of business endurance. Actually, because of the revision of the income tax right in the middle of the financial year, January brought a good deal of collection of tax at the rate of 8s. 6d. in the pound, and deductions of 10s. were not unknown where payments for two quarters had already been made. Experience of such deductions has disclosed the creation of grave hardship, with probable loss hereafter to the Exchequer. It seems then that the present rate of income tax is about as far as the Chancellor of the Exchequer can go before reaching the point at which the total volume of receipts positively begins to decline.

There remains the trouble that the gap between revenue and expenditure is increasing every day. Another Budget is due to be introduced next month, and the Treasury must be already occupied in trying to discover new devices for raising money. What the business world ought already to be making plain to the Chancellor of the Exchequer is that he must at all costs abstain from any fresh increase of income tax. He cannot doubt that industry is pulling its weight as probably never before. It is having to face extraordinary difficulties in the raw material market and in the demands of employees for increased wages in view of a certain rise in the cost of living. It is surmounting these and other difficulties created by war with conspicuous success, and it would be the height of folly to create a fresh area of disturbance just at the moment when a new balance in business economy had been struck. Theorists lacking any sort of financial experience are urging an increase of either income tax or of the Excess Profits Tax, or of both. There is likewise danger to the Exchequer in the field of excess profits. That tax now stands at 60 per cent. and it is true that at the end of the last war it was as high as 80 per cent. The conditions, however, are very different to-day. There is a system of official control of Government work which is based on the assumption that business enterprise can succeed on a margin of profit of no more than five or six per cent. Every man who has had to take the risks of business knows that this simply cannot be done, and there might very possibly be a real breakdown if there were an early increase of the 60 per cent. rate. There is no question here of selfish greed. These are matters of plain common sense which can be tested statistically. Everybody agrees that the war must be paid for as far as possible by the generation that is fighting it. It ought equally to be agreed that taxation should be based solely on capacity to pay, and that anything in the nature of a penal threat should be avoided like the plague for the simple reason that it will not bring in the money. The best chance for British business, and therefore for the successful prosecution of the war, is that for another twelve months direct taxation should not be allowed to exceed its present figure.

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NOTES AND COMMENTS

Post-War Industrial Problems

A STRONG plea that industrialists should soon give attention to problems likely to arise after the war, was made by Lord McGowan at a dinner of the Coal Trades Benevolent Association at Glasgow on Wednesday. The great post-war problem would be the throwing upon the labour market of a large part of the disbanded forces and of employees in factories to-day engaged on Government work. Three factors might help to ease the strain of transition, Lord McGowan suggested. First, there would be a vast amount of replacement necessary in respect of the large industrial plants which had been working throughout the war at high pressure. Manufacturers might show their confidence in the future by bringing all their plants up to the highest possible level of efficiency without delay. Such action would, of course, involve enormous expenditure, and if necessary, temporary loans should, Lord McGowan said, be made to encourage industry in this purpose. The second factor to help unemployment would be a vast scheme of public works. The money for this should be borrowed and recovered by taxation from the fruit of the new efficiency it would produce. Lord McGowan particularly emphasised the necessity for slum clearance, the perils of which had been illustrated during evacuation in the early days of the war. The third factor was the export trade, and Lord McGowan congratulated the Board of Trade on attacking this vigorously. The question was, how were we to ensure that what we had won would be held when the war ended? We might be sure that Germany would show no slackness in again securing her world economic position. Lord McGowan also referred to the paramount importance of research in industry. Research on coal was particularly important because coal was consumed always in conditions which were partly the result of physical, chemical and engineering development.

Franco-British Trade Agreement

THE discussions between the Federation of British Industries and the Confédération Générale du Patronat Français have had a speedy result in the formulation of an agreement "with the object, not only of promoting co-operation during the war, but also of serving as a permanent feature in economic relations between the two countries." The terms of the agreement, which have been published in full in the daily Press, are wisely left with a certain margin of fluidity. For instance, while the necessity of restricting home civilian consumption, in order to make possible an expansion of the export trade, is recognised, it is agreed that this policy may have to be adjusted from time to time. Important points in the terms of the agreement are the elimination of uneconomic competition and the maintenance of such price levels in the export markets as will ensure the development of consumption; negotiations between individual industries should be quickly undertaken, and the wider the area of industry included in such agreements, the more rapid the expansion of export trade now and the restoration of normal trade at the end of the war. The two organisations consider that their common objective in post-war economic policy must be the rapid re-establishment and expansion of international trade, which alone can form the basis of enduring peace, with a development of consumption resulting in a fuller exchange of commodities. This will enable the consumer to obtain better and cheaper products, and the manufacturer to keep his workers employed.

Release of Technical Workers

CAPTAIN PLUGGE, that indefatigable spokesman of the scientific industries, has again taken up the cause of the technical worker in Parliament. Pressure is very justly being brought to bear on the Government to release specialist workers from military service in order to perform the vital technical tasks for which they alone are fitted; and there is a crying need to-day for workers in the laboratory glassware industry—an industry, as we have already pointed out, that has been painstakingly built up in this country, despite every discouragement since the beginning of the last war. It now appears that the Minister of Supply is fulminating against a firm of glassware manufacturers for not supplying in due time the technical material required by Government order. The very same firm has appealed again and again to the Services departments to release their key men in order that they might get on with the Government requirements (not to mention other urgent work). Here we have the usual paradox of the left hand not knowing what the right hand is doing; and it is devoutly to be hoped that Captain Plugge's ventilation of this preposterous state of affairs will lead to some practical steps towards co-ordination. Meanwhile Commander Locker-Lampson has drawn attention to the fact that the request made by the Government to the Royal Society to prepare a list of scientific advisers has not been followed up. The advisers have been duly listed, but their advice has not been sought, or at best only grudgingly. Here is a tool for co-ordination lying ready to hand, but neglected. Dare we suggest that if it were used some of the "semi-scientific jacks-in-office," which Commander Locker-Lampson spoke of, might be co-ordinated out of existence?

DETERMINATION OF MOLYBDENUM IN FERROUS MATERIALS*

A Combination of Established Methods

A MODIFICATION of Knowles' α-benzoinoxime method for the determination of molybdenum in cast iron and steel was adopted as a standard procedure in the authors' laboratory during 1935. The method was accurate and more rapid than the former practice, which involved separation by hydrogen sulphide and weighing as lead molybdate. However, the ignition of the molybdenum compound of α-benzoinoxime to molybdic oxide at temperatures below 550° C. was troublesome. The operation required at least an hour, and demanded accurate control of the temperature in order to avoid losses of molybdenum. In addition, it was necessary to correct the weight of the oxide for small amounts of impurities. The authors have succeeded in overcoming these annoyances by dissolving the α-benzoinoxime precipitate in ammonia, filtering off the insoluble impurities, and precipitating the molybdenum as lead molybdate. This procedure yields a pure precipitate containing a favourably low percentage of molybdenum, which may be ignited quickly under easily obtainable conditions.

Reagents Employed

The following reagents were prepared, using reagent grade chemicals with the exception of perchloric acid. As a matter of economy the technical grade acid is used in all routine work.

Nitric-Perchloric Acid Mixture. Mix 3 volumes of 68 to 70 per cent. technical grade perchloric acid with 1 volume of nitric acid (sp. gr. 1.42) and 1 volume of water.

Potassium Bichromate Solution. Dissolve 1.41 grams of potassium bichromate in water and dilute to 100 ml. Each millilitre contains 5 mg. of chromium.

Ferrous Sulphate 5 per cent. Solution. Dissolve 50 grams of ferrous ammonium sulphate hexahydrate in water, add 50 ml. of 1 to 1 sulphuric acid, and dilute to 1 litre.

α-Benzoinoxime 2 per cent. Solution. Dissolve 2 grams of α-benzoinoxime in 100 ml. of ethyl alcohol.

Lead Acetate Buffer Mixture. Dissolve 4 grams of lead acetate trihydrate in a solution containing 275 ml. of water, 550 ml. of ammonium hydroxide (sp. gr. 0.90), 900 ml. of 50 per cent. acetic acid, and 275 ml. of hydrochloric acid (sp. gr. 1.19). Let stand overnight and filter.

Preparation of the Solution. Transfer 3 to 5 grams of steel or cast iron to a 600-ml. beaker and add 50 to 70 ml. of nitro-perchloric acid mixture. Cover the beaker and heat gently until action ceases. Remove the watch glass, and add 1 to 3 ml. of hydrofluoric acid. Add sufficient potassium chromate solution to cast-iron samples to make the total chromium content of the solution at least 25 mg. The chromium catalyses the destruction of graphite and carbides by boiling perchloric acid.

Evaporate the solution from the open beaker until heavy white fumes appear. Continue heating until volatile acids are driven from the beaker and the perchloric acid comes to a boil. Cover the beaker with a watch glass and boil gently until carbides and graphite are decomposed. The rate of boiling should not be high enough to cause excessive losses of perchloric acid. Remove the beaker from the hot plate and allow to cool until the perchlorates crystallise. Dilute the solution to 100 ml. and stir, heating if necessary, until the salts have dissolved. Filter off any insoluble residue.

Precipitation by α-benzoinoxime. Cool the prepared solution below 20° C. and add ferrous sulphate until the solution has a clear blue-green colour that is not changed by adding a slight excess. Dilute to 400 ml. and cool to 5° to 10° C. in an ice bath. Pieces of clean ice may be added to the solution itself.

Add 10 ml. of α-benzoinoxime solution slowly while stirring. Add an additional 0.5 ml. for each milligram of molybdenum present. Add bromine water while stirring until the solution is tinted a pale yellow, and then add 3 to 4 ml. more of reagent. Let stand 5 to 10 minutes in the ice bath with occasional stirring. Filter the precipitate on a 15-cm. rapid paper and wash with cold 2 to 98 sulphuric acid containing a few millilitres of reagent. Fill the paper with washing solution and allow it to drain completely before breaking up the cake with the stream from the wash bottle. Treat the filtrate with more reagent as a check on the complete separation of molybdenum. Needle-like crystals will deposit on standing if sufficient excess reagent has been added.

Reprecipitation of Molybdenum as Lead Molybdate. Transfer the precipitate back to the original beaker by means of a jet of water. Add 10 ml. of ammonia and 10 ml. of 30 per cent. hydrogen peroxide, dilute to 75 ml., and boil until the evolution of oxygen ceases. Filter through the original paper and wash the paper and small residue with hot ammonia (2 to 98). Pour the hot ammoniacal molybdenum solution into 100 ml. of boiling lead acetate buffer mixture slowly while stirring, boil gently until the precipitate coagulates, and allow to settle for 30 minutes. If the precipitate is small, the settling period should be extended to several hours or overnight. Filter the precipitation on a close-texture paper containing a little paper pulp, wash thoroughly with hot 2 per cent. ammonium acetate solution containing a few millilitres of acetic acid, and ignite the paper and residue in a porcelain crucible placed just inside a muffle furnace operating at a dull red heat. Weigh as lead molybdate containing 26.14 per cent. of molybdenum.

The authors' work on this method was initiated by the observation that the α-benzoinoxime precipitate is freely soluble in fixed alkali. A long series of experiments on essentially the method recommended, but using sodium hydroxide as a solvent, gave results that were consistently high by 0.01 to 0.05 per cent. of molybdenum. The error was found to be caused by silica introduced by corrosion of the glassware by the small amount of caustic used. When nickel beakers were substituted for Pyrex the results were normal. By substituting ammonium hydroxide for sodium hydroxide the corrosion of glass was reduced to the point where is could be neglected. However, the precipitate dissolves more slowly in ammonia than in sodium hydroxide, making it essential to remove it completely from the paper for the treatment with ammonia. The small amount of iron carried down by the α-benzoinoxime precipitate is partially precipitated by the alkaline solvent. When hydrogen peroxide is added the precipitation is complete, allowing the impurities to be removed by the subsequent filtration.

Application of the Method

α-Benzoinoxime is nearly specific for molybdenum under the prescribed conditions. Tungsten, tantalum, and columbium are the only interfering elements that might be found in ferrous materials. The authors have not tested the method on any of the comparatively rare cases in which one or more of these elements is associated with molybdenum, but the following notes should serve as a guide when such complex alloys are encountered. An insoluble residue in the normally clear perchloric acid solution of the sample is an indication of the presence of interfering elements. Tantalum or colum-

* From a paper by Calvin Sterling and W. P. Spuhr, The International Nickel Co., Inc., Research Laboratory, Bayonne, N.J., in Ind. Eng. Chem., Analyt. Ed. *12*, 1, 33.

bium alone would be precipitated and filtered off. The determination would then follow its usual course. If appreciable amounts of titanium were also present, the precipitation of the earth acids would be incomplete. The soluble fraction would be carried down in the first molybdenum precipitation. An abnormally large ammonia-insoluble residue would be found, and probably recovery of occluded molybdenum would be in order.

The chief offender is tungsten. In some cases it will be completely precipitated by the perchloric acid treatment, but it is never safe to assume this. Any tungsten remaining as a soluble complex with phosphorus or molybdenum itself will be weighed with the lead molybdate. Probably the best line of attack on tungsten steels will include a preliminary separation of molybdenum from tungsten by hydrogen sulphide.

Occasionally, when the percentage of molybdenum is very high, as in corrosion-resistant nickel-chromium steels, some of the molybdenum is precipitated as the oxide in the prepared solution. The difficulty in such cases is overcome by repeating the determination on a smaller weight of sample. The useful field of application of the recommended procedure includes practically all the tungsten-free molybdenum-bearing irons and steels.

LETTERS TO THE EDITOR

The Gentle Art of Not Purchasing Chemical Plant

SIR,—A few days ago after lunching with a chartered accountant, quite exceptionally well but not too wisely (at his expense), the conversation turned on some of the questions which were dealt with in a paper by Foxwell and Reavell on British Chemical Plant Manufacture (see THE CHEMICAL AGE, February 24, p. 113). My friend was bitterly sarcastic about the business methods of engineering firms and handed to me a large box file containing a correspondence which had come into his hands, saying: "Get a load of this," snorted, and departed.

I have felt that this correspondence would be interesting, if not instructive, to some of your readers. In order to understand the small selection of letters published it is necessary to know the participants: both highly respectable firms, one still flourishing, the other, it must be regrettably admitted, seems now to be in some small difficulties. The essential information about the participants may be gathered from the letter headings:

Lecash, Snook and Barbot, Ltd.,
Fabricators of Complete Chemical Plants for all purposes.
Established 1939.
(hereinafter referred to as L.S.B., Ltd.);

and

Chevalier, Rott and Gauner, Ltd.,
Chemical Manufacturers
(Only Makers of Bojium Bunkate in the World).
Established 1666.
(hereinafter referred to as C.R.G., Ltd.)

The correspondence relates to an inquiry for a complete chemical plant which C.R.G., Ltd., did not ultimately purchase whatever their intentions may have been when they issued their inquiries. The correspondence is far too long to give in full; only a few typical specimens will be given for the guidance more particularly of those who have wasted their time hitherto in studying business methods and technical subjects.—Yours faithfully,

I. TWIGG.

Opening Stages.

C.R.G., Ltd., to L.S.B., Ltd. April 1st, 1939.

Dear Sirs,—We are calling for quotations for a complete plant for the manufacture of 100 tons of Bojium Bunkate per week, d/d and erected at our works.

Please let us have full and detailed working drawings and specifications as soon as possible. No quotation will be considered unless accompanied by fully detailed working drawings and specifications of all component parts of the installation.

Your offer must state what guarantees of performance you are prepared to give, under penalty, and 10 sealed samples each of 1 cwt. of the Bojium Bunkate of the guaranteed quality must be submitted with your tender and delivered carriage paid to our works.

The drawings and quotations must be supplied in quadruplicate and must reach us within 14 days.—Yours fathfully,

E. GAUNER,
C. Investigation Department.

L.S.B., Ltd., to C.R.G., Ltd. April 2nd, 1939.

Dear Sirs,—We thank you for your esteemed inquiry for a complete plant for the production of Biojum Buknate. This is exactly in our line.

Our unrivalled experience in this special direction; our unparalleled technical knowledge and manufacturing resources place us in a unique position for tendering.

We send herewith a questionnaire sheet (our form 417 Bx—4376). Would you please give answers to these essential questions so that we may proceed at once with the work on the tender.

Apologising for troubling you in this matter.—Yours faithfully,

D. SNOOK,
Manager, Contracts Department.

C.R.G., Ltd., to L.S.B., Ltd. April 3rd, 1939.

Dear Sirs,—In answer to your letter of 2nd instant, we must inform you that we are unwilling to enter into a discussion which would involve a disclosure of our manufacturing secrets. We gave in our letter of 1st instant all the information we intend to give. Your competitors have not asked for further information and we, therefore, presume that they can submit tenders without putting us to so much trouble and inconvenience.

If you cannot tender without asking questions which we are unable to answer, we must cross you off the list of contractors.—Yours faithfully,

E. GAUNER,
Secretary.

Thirteen further letters passed before a truce was reached. Finally, however, the inquirers climbed down as will be seen from the following highly illuminating epistle.

C.R.G., Ltd., to L.S.B., Ltd. April 20th, 1939.

Dear Sirs,—In answer to your further letter we now have pleasure in giving the following information, relying on your assurances of secrecy:

(1) Whilst we have a steam supply in our works, we are unable to answer the questions about pressure and temperature. Will you please, therefore, include in your tender complete steam and power plants, quoting separate prices and giving full details.
(2) We propose to use a coal of medium quality which is available at a moderate price.
(3) The water supply is not particularly plentiful and varies in temperature throughout the year. We have no analysis of the water, but are sending you a 4 oz. bottle so that you can make a complete analysis—copy of which kindly attach to your tender.

Incidentally we shall require a calculation of the manufacturing cost of the Bojium Bunkate which you could produce by your system.

Time is getting short, please let us have the drawings at once.—Yours faithfully,

E. GAUNER,
Chief Engineer.

L.S.B., Ltd., to C.R.G., Ltd. April 21st, 1939.

Dear Sirs,—We thank you for your courteous letter of 20th instant which gives us clearly and succinctly just the information we require.

One of our technical experts has an unequalled knowledge of the manufacture of Biojum Benkate, having already designed several important installations for this purpose.

Assuring you that we shall devote our unparalleled experience and technical resources to the study of your requirements.—Yours faithfully,

D. SNOOK,
Research Department.

C.R.G., Ltd., to L.S.B., Ltd. April 22nd, 1939.

Dear Sirs,—We should be obliged if you would let us know where the Bojium Bunkate plants built by your expert may be inspected. We have always contended that we were the sole manufacturers of this product in the universe.—Yours faithfully,

ELIJAH GAUNER,
Legal Department.

Note.—A prolonged and fencing correspondence ensued from which it is gathered that Messrs. C.R.G., Ltd., were not, in fact, the only manufacturers in the world, but it appeared that the designer of Messrs. L.S.B., Ltd., was unwilling to give any information about the plants he had designed, having been sworn to secrecy. One is inclined to suspect that the designs in question were either imaginary or consisted chiefly of thumbnail sketches of bright ideas and had never, in fact, been put into practice.

Middle Stage.

After reminders that the tender was overdue, at last the great masterpiece is cast like bread upon the waters.

L.S.B., Ltd., to C.R.G., Ltd. May 15th, 1939.

Dear Sirs,—We have pleasure in sending herewith for your kind consideration our tender BXQ—476/25-93, for a complete installation for the manufacture of the highest commercial quality of Bonium Bunpate. We have forwarded to your works, carriage paid, ten 1 cwt. drums of material manufactured in our experimental factory.

The tender is accompanied by 42 photographs, 127 drawings, 3 specifications (273 pages), 7 charts, 2 operating costings and 1 guarantee form.

The price quoted has been calculated without profit, but if you find it too high please let us know at once and we shall endeavour to meet you as we are very anxious to demonstrate our unparalleled experience and knowledge to you. We should, of course, be prepared to accept payment in instalments spread over 10 years, commencing 2 years after the plant has been put into working order and all guarantees have been fulfilled to your satisfaction.—Yours obediently,

D. SNOOK,
Finance Department.

C.R.G., Ltd., to L.S.B., Ltd. August 19th, 1939.

Dear Sirs,—In reply to your numerous letters, telephone calls, telegrams and representatives' visits, we now write to say that the samples of Bojium Bunkate have been examined by our Sales Department and they consider the quality unsatisfactory. One of your competitors has submitted a surprisingly good quality of material.

We find also that two of your drawings of the conversion vessels do not show full details of the riveting. Please let us have these details as we require them at once.—Yours faithfully,

E. GAUNER,
Mechanical Engineer.

Final Stage.

This letter is rather mysterious as it appears from the correspondence that the samples sent were not manufactured in the experimental factory. In fact, no experimental factory existed. It would seem that the samples were of material purchased through a dealer and were probably manufactured by Messrs. C.R.G., Ltd. It is regrettable that they did not appear to recognise their own product and that they condemned themselves out of their own mouths. It would seem, however, that they were astonished that somebody could produce a better product than they were actually manufacturing.

After more frantic appeals, calls, telegrams, and the usual paraphernalia of sales effort, the following duplicated circular finishes off the correspondence.

C.R.G., Ltd., to L.S.B., Ltd. August 29th, 1939.

Dear Sirs,—We have now had an opportunity of considering the tenders submitted to us for an installation for the manufacture of Bojium Bunkate, and regret to say that although only twenty-five tenders were received as the result of the large number of inquiries we issued, none of these tenders reached the standard which we now consider necessary. The prices were furthermore too high.

Under the circumstances we have been reluctantly compelled to proceed with the building of the plant ourselves. We nevertheless thank you for the trouble you have taken.—Yours faithfully,

E. GAUNER,
Managing Director.

EPILOGUE.

Two newspaper cuttings were pinned to the back of the bundle of correspondence. As these have a slight bearing on the subject we have given them as a matter of interest:—

"At a recent meeting of the Chemical Manure Association, Mr. Elijah Gauner, Chairman of Messrs. Chevalier, Rott and Gauner, Ltd., stated that the Continental manufacturers of chemical plant were far in advance of their British rivals. Recently his Company had occasion to call for tenders for an important installation. Although in all some fifty British firms were invited to submit tenders, the proposals received were fragmentary and unsatisfactory. One Continental firm submitted a surprisingly good sample of the product required, but the price of the installation was considerably in excess of that quoted by the British firms, and it was impossible to extract any information from the specifications submitted by the Continental firm as to how the material was produced. This was a clear example of the rapacity and knavery of the subsidised and state-aided Continental firms and, although this firm had succeeded in submitting a very interesting sample, he was sure that since they would not disclose their information and co-operate properly with his concern he had taken the correct course of refusing to buy a "pig in a poke." (Applause.)

He had, therefore, to turn his own research and engineering departments on to the job, and in an incredibly short space of time they had succeeded in designing and building a plant which he hoped, after overcoming the difficulties which are invariably experienced in the early stages of a plant operation, would be a proof that British firms had no need to go outside their own works for any installations they required. (Vociferous applause lasting several minutes.) He again strongly advocated a greater policy of co-operation and suggested that the chemical plant manufacturers and chemical engineers should get together with the chemical manufacturers in order to study the real requirements of industrialists in a proper manner."

The second newspaper cutting was a trifle less stimulating.

"It is understood that the firm of Lecash, Snook and Barbot, Ltd., is in voluntary liquidation. We regret to learn that Mr. D. Snook, who was a few years ago appointed as chief designer, has had a severe nervous breakdown."

Chemical Matters in Parliament

Gas-Producer Plant

IN the House of Commons last week Mr. Shinwell asked the Secretary for Mines whether he could report any progress in the use of gas-producer plant for mechanical transport; and whether there was any official at the Mines Department who had any practical experience of the subject.

Mr. Lloyd replied that the report of the committee on the Emergency Conversion of Motor Vehicles to Producer Gas was published three weeks ago. The design of conversion equipment evolved by the committee had been made available to a number of firms, and he understood that in some cases manufacture had already begun. As regards the last part of the question, he would remind the hon. member that Sir Harold Hartley was now honorary adviser to the Mines Department on the development of home-produced fuels.

Glassware Workers

Captain Plugge asked the Secretary of State for War last week whether he was aware that Messrs. John Moncrieff, Ltd., of the North British Glass Works, Perth, have received a letter, dated February 21, from the Ministry of Supply informing them that the delay in the delivery by them of glass tubing was causing them serious inconvenience and holding up the manufacture of instruments urgently required to meet War Office demands; whether he was aware that this delay was caused by the inability of the firm to obtain the release from military service of certain essential scientific glassware workers; and whether, in these circumstances, he could expedite the release of the men in question, some of whom, as a result of delays in this respect hitherto, have now been sent to France?

Mr. Stanley replied to the first part of the question in the affirmative. As regards the rest of the question, he was making inquiries in collaboration with the Minister of Supply, and would communicate the answer in due course.

Scanty Use of Scientists

In the course of the debate last week on Air Estimates Commander Locker-Lampson made reference to the scanty use of the recommendations of learned societies for the effective use of personnel. "There is," he said, "an eminent society whose first President, Isaac Newton, sat in this very House. That Royal Society has recently compiled a register of 1,200 eminent scientists, the pick of British brains made available for work in this war, whether paid or unpaid, whether uniformed or not. He was sorry to hear that these services were being sparingly used by the Government. Sir William Bragg the other day, at the annual meeting of the Royal Society, lamented Government neglect. This was very serious, Commander Locker-Lampson continued. As far as he knew it was only in the Admiralty that physicists had been used. Some of our offices were full of semi-scientific jacks-in-office who plead secrecy and other standardised forms of obstruction in order to resist and keep out new ideas and genius. Was it not true of this war more than anything else, he went on to ask, that it was an experts' war? He invited the Government to appoint a body of outside scientists if only to study the diet of the troops, thus creating a body on a popular basis to stand between them and public opinion.

Aluminium Prices

Suggestions that the price paid for aluminium by the Aluminium Control was unduly high were denied by Mr. Burgin, Minister of Supply, last Monday. Mr. Burgin was answering Mr. Vyvyan Adams, who asked the Minister whether he was aware that it was estimated by users of raw aluminium that the British Aluminium Company could make a reasonable profit by selling raw aluminium to the Aluminium Control at a figure between £65 and £70 a ton; and for what reason he was paying £94 a ton to the British Aluminium Company.

(*Continued at foot of next column.*)

(*Continued from previous column.*)

Mr. Burgin said that he was not aware of the estimate referred to or on what it was based. The price being paid for aluminium produced in this country was substantially less than the world price of aluminium or the price which was being paid in other countries. He was satisfied that it was a reasonable one in the circumstances in which the contract was made. When the contract came up for renewal the price would, of course, be reconsidered.

Asked what progress was being made with the aluminium works at Resolven, when they were likely to start producing, and whether steps were being taken for the extension of these works, Mr. Burgin said that it was hoped to commence production towards the end of the year. Consideration was being given to further proposals for additional production in South Wales.

Progress in Tin Research

Report of the International Council

THE completion of the Council's new offices and the equipment of their laboratories at Greenford, Middlesex, are recorded in the 1939 Report of the International Tin Research and Development Council. Since the outbreak of war research has been concentrated upon tinplate, bearing metals and tin coatings on steel and copper. Devices for producing a better quality of tinplate are being tried and a process for producing a passive surface on this material has been found and is being thoroughly tested with canned foods; the results are so far very encouraging. Many years of research have now enabled the Council to issue precise directions for the successful electro-deposition of pure tin in any desired thickness upon other metals; this process is being taken up by makers of food manufacturing equipment, as these thicker coatings will give a correspondingly longer life than the hot-dipped coatings hitherto in use, without a material increase in cost.

Exceptionally strong tin alloys are another development and three of the new alloys are now undergoing tests as bearing metals for internal combustion engines. A new group of tin-antimony-cadmium alloys, having higher antimony contents (9-14 per cent.) than those investigated previously, has now been studied in detail. The most suitable of these alloys are to be recommended for the production of small parts by die-casting, since this process would automatically produce the correct conditions for maximum strength and no subsequent heat-treatment would be required. The effect of heat treatment on these alloys is being studied, however, to select those compositions which will maintain their high strength for long periods at elevated temperatures, and it has been possible to produce a different type of hardening which in certain alloys is retained for at least 1,000 hours at 100° C., showing that these alloys are suitable for continuous service at temperatures up to 100° C. This work is now being extended to find alloys which will maintain their enhanced properties at even higher temperatures (120°-140° C.).

An investigation of the constitution and mechanical properties of tin-arsenic alloys has been undertaken to determine the effect of arsenic when present as an impurity in tin and its alloys, and as a preliminary step towards the rational use of arsenic as an alloying addition in other alloys of tin. Preliminary experiments have established that there is an appreciable solubility of arsenic in tin, and that arsenic exerts a strong hardening effect both on cast and on rolled tin.

Trials are continuing with a new class of bronzes richer in tin than has before been practicable. They are particularly suitable for condenser tubes on account of their good resistance to corrosion.

A new chemical company for the purpose of utilising oils in manufacturing has been formed by Chinese industrialists in Shanghai with a capital of 500,000 yuan (nearly £10,000). Products made at the plant will include glycerine and stearic acid.

Society of Public Analysts and Other Analytical Chemists

Annual Meeting and Election of Officers

THE annual meeting of the Society of Public Analysts and Other Analytical Chemists was held on March 6, at the Chemical Society's Rooms, Burlington House, the president, Professor W. H. Roberts, in the chair. The hon. treasurer, Dr. E. B. Hughes, presented the annual statement of accounts, which showed a very satisfactory increase in income and balance of income over expenditure. The annual report of the Council, presented by the hon. secretary, Mr. Lewis Eynon, showed a membership of 886, a net increase of 29 during the year. Ten meetings had been held by the Society and its local sections, in London and elsewhere, and at these, twenty-one papers had been read and discussed. Other activities of the Society had been well maintained, and its journal, *The Analyst,* continued to grow in circulation.

The president then delivered his presidential address, in which he pointed out that there was much less need in this war than in the last for the formation of *ad hoc* committees of chemists to deal with problems with which the Government departments found themselves faced, so much had been foreseen and provided for; and some of the departments had from the outset adopted the wise course of appointing to their staffs eminent outside chemists, who not only brought to the departments their own expert knowledge but also rendered the departments more accessible to suggestions and representations from outside chemical bodies. He could not speak with equal approval of the arrangements made for services of chemists in the event of air-raids with use of war gases. The conditions of appointment of Gas Identification Officers needed reconsideration, especially in view of the duties now placed upon them in respect of preliminary food tests for gas-contamination. Public analysts, on whom would devolve the final testing of foods for gas-contamination had experienced great difficulty and delay in obtaining information and samples necessary for this work.

Turning to the Food and Drugs Act of 1938, the president doubted the wisdom of bringing this Act into operation on October 1, 1939, inasmuch as its value largely depended on the issue of regulations for different classes of foods, and the issue of such regulations by the department concerned had been indefinitely postponed. The rationing of meat would probably lead to increased consumption of certain other foods, such as sausages and cheese, and regulations governing the content of meat in sausages and of water in cheese (particularly processed cheese) would therefore become very necessary.

The number of analysts and consultants in independent practice had diminished greatly in recent years, but in the public interest it was important that there should be a strong band of such chemists, not attached to any special interest, and it was therefore necessary to watch closely for cases of unfair competition by publicly supported laboratories. In the past year the Society had taken successful measures to prevent what it considered to be a case of this kind. Speaking of the necessity of maintaining a high standard of efficiency amongst analysts, the president expressed regret that no English University had yet inaugurated a Chair of Analytical Chemistry, and also suggested that the universities should exercise more rigorous selection to ensure that only students having a real aptitude for the subject should be admitted to their courses.

After the election of officers and members of Council, Professor Roberts, retiring from the presidency at the close of his biennial term of office, inducted his successor, Dr. E. B. Hughes, into the presidential chair. Dr. Hughes has been hon. treasurer of the society for the past twelve years.

Dr. E. B. Hughes, President of the Society of Public Analysts and Other Analytical Chemists.

The following were elected officers and members of Council for the year 1940/41: President: E. B. Hughes, D.Sc., F.I.C.; Past Presidents serving on the Council: F. W. F. Arnaud, B. Dyer, J. Evans, E. Hinks, G. Roche Lynch, W. H. Roberts, G. Rudd Thompson.; Vice-presidents: E. B. Anderson, S. E. Melling, F. G. H. Tate, J. R. Stubbs (chairman of the North of England Section), T. Cockburn (chairman of the Scottish Section); Hon. Treasurer: G. Taylor; Hon. Secretary: Lewis Eynon; other members of Council: C. A. Adams, F. C. Bullock, H. E. Cox, D. C. Garratt, L. H. Lampitt, G. W. Monier-Williams, C. J. Regan, T. Rendle, A. Scholes, W. M. Seaber, W. H. Simmons, W. W. Taylor, A. Lees (hon. secretary of the North of England Section), J. B. McKean (hon. secretary of the Scottish Section).

Manchester and Liverpool S.C.I.

Sir John Orr's Jubilee Memorial Lecture

THE annual joint meeting of the Manchester and Liverpool sections of the Society of Chemical Industry was held in Reece's Restaurant, Parker Street, Liverpool, last week. Owing to the poor transport facilities the usual large influx of Manchester visitors was greatly reduced, but the attendance as a whole benefited by the postponement of the meeting from February 2 for there was a large and enthusiastic audience of members and visitors.

Mr. B. D. W. Luff, chairman of the Liverpool Section, welcomed the visitors and explained the origin and purpose of the jubilee memorial lectures of the Society of Chemical Industry. Lecturers on these occasions were, he said, distinguished in their own field of activity. On the present occasion the audience was to hear an address on the chemical aspects of nutrition by Sir John Boyd Orr, director of the Rowett Institute, Aberdeen, Interest in his subject matter was largely increased by the urgency of the present times. The lecturer was a specialist who had paid particular attention to minerals in feeding stuffs. Much emphasis in the Press and on the radio had recently been placed on the good qualities of oatmeal, especially when eaten as porridge with salt in the Scots fashion.

At the conclusion of the lecture, which, as is customary on "jubilee" occasions, was not followed by a discussion, Professor T. P. Hilditch proposed a vote of thanks to Sir John Orr. He maintained that in the application of knowledge to human welfare as distinct from the pursuit of science as an end in itself there was a precept worthy of attention, especially by the younger generation. Mr. H. Humphreys Jones, principal of the Liverpool School of Pharmacy, seconded the vote of thanks.

Sir John Orr replied briefly and was entertained to dinner after the meeting.

Chemistry in Tropical Agriculture

Annual Report of the Imperial College

THE report of the governing body of the Imperial College of Tropical Agriculture, St. Augustine, Trinidad, together with the principal's report recording progress to the end of 1939, was published last week. Founded in 1921 to provide for the teaching of tropical agriculture and the conduct of research, the College is the recognised centre for the post-graduate training of candidates for the Colonial Agricultural Services. It is remarked that the activities of the College have a direct bearing upon agriculture and especially food supply, and the work of the College may be expected to become of increasing importance in existing circumstances. New contributors to the College funds are the Governments of Jamaica, Fiji and Cyprus; while increases in contributions are to be recorded from the Governments of Kenya, Nyasaland, Uganda, Zanzibar and Northern Rhodesia.

Mr. O. T. Faulkner, C.M.G., in the first report compiled by him as principal, instances sugar technology as a sphere in which teaching and research directly help each other, and specially mentions the work on the gas storage of bananas. It is now substantially certain, he says, that the physiological studies of the stored banana, which have been carried on for three years, will culminate in the evolution of a system of refrigeration and gas storage for the banana which, when translated into practice, ought to mean savings and increased profits for the industry running into very large figures.

Much work in the laboratory and factory of the Department of Sugar Technology was carried out in an attempt to find a suitable substitute for stannous chloride in yellow crystal sugar manufacture. The use of the chemical is objected to by Public Health Authorities. A substitute was found which, while satisfactory under certain conditions, will require further study under others. A second process was also evolved in the experimental sugar factory. The importance of accurate chemical control in the factory is constantly being emphasised.

ROYAL SOCIETY MEETING

At a meeting of the Royal Society at Burlington House last Thursday, a paper was read by R. E. Smith and C. N. Hinshelwood, F.R.S., on "The Thermal Decomposition of Gaseous Benzaldehyde."

The thermal decomposition of benzaldehyde, which takes place predominantly according to the equation $C_6H_5CHO \rightarrow C_6H_6+CO$, is homogeneous, and differs from the corresponding reaction of acetaldehyde in that it is of the first order above 100 mm., and is subject to partial inhibition by nitric oxide. The residual inhibited reaction shows a pressure dependence very like that of the normal acetaldehyde reaction. The activation energy increases as the pressure decreases. The authors explain the results by assuming the superposition of a chain reaction and of a molecular reaction. The order of the uninhibited reaction and the influence of nitric oxide at different initial pressures of benzaldehyde indicate the probable mechanism of the chain part of the decomposition, which appears to involve the decomposition of the radical CHO as an essential step.

Two further papers, both by E. A. B. Birse and H. W. Melville, on "The Reaction of Atomic Hydrogen with Hydrazine" and "The Photolysis of Ammonia," were communicated by Professor J. Kendall, F.R.S.

CANADIAN STANDARD SPECIFICATIONS

H.M. Senior Trade Commissioner at Ottawa has provided copies of the following additional specifications issued by the Canadian Government Purchasing Standards Committee, National Research Council, Ottawa, and they are available on loan from the Department of Overseas Trade, Great George Street, London, S.W.1. The reference number, 15711/40, should be quoted.

No. 15-GP-8-1940 Sulphuric acid, battery electrolyte grade.
No. 15-GP-7-1940 Caustic soda (lye).

National Coal Resources

Survey of a Cumberland Seam

THE latest report of the work of the National Coal Survey being carried out by the Department of Scientific and Industrial Research deals with the Six-Quarters seam of the Cumberland coalfield (Fuel Research Physical and Chemical Survey of the National Coal Resources No. 49; H.M. Stationery Office, 2s. net). The work was conducted under the guidance of the Cumberland Survey Committee composed of representatives of the Cumberland Coal Owners' Association, a representative of the Geological Survey of Great Britain and the Department's Director of Fuel Research. It was estimated in 1905 that the reserves of workable coal in the Cumberland coalfield amounted to nearly 1,528 million tons, including the rather uncertain amount under the Carlisle Basin, and undersea coal to a distance of five miles from the land. As the output from the coalfield is about 60 million tons since 1905, the useful life of the field may be reckoned in hundreds of years.

In carrying out the survey 13 pillar samples extending from the roof to the floor of the seam were cut out from localities including four sites under the sea. These were sent to the Department's Coal Survey Laboratory at Newcastle-on-Tyne for examination and analysis. The results show that the seam yields a coal of reasonably good quality, the ash contents varying from 4.0 to 7.7 per cent. The moisture contents of the air-dried samples varied somewhat irregularly between 1.7 and 4.5 per cent. The volatile matter content is generally about 37-39 per cent. on an air-dried basis, though some variations occur.

The general value of the carbon content, on a coal substance basis, was 86 per cent. The organic sulphur content does not exceed 1 per cent., but the total sulphur figures are variable and, in one or two cases, rather high. The calorific values showed little variation. In most of the samples, the phosphorus content is very low. The coke yields are normal for the rank of the coal. Considerable reserves of the seam exist in most of the localities from which samples were taken; its quality is good and it will become of increasing importance in the future.

THE MINERALOGICAL SOCIETY

At the general meeting of the Mineralogical Society held in the room of the Geological Society of London on March 7, with Mr. Arthur Russell, M.B.E., president, in the chair, Mr. A. W. G. Kingsbury read a paper on "Mineral Localities on the Mendip Hills, Somerset." A systematic examination of this district, over several years, led to the discovery of a number of interesting minerals not previously recorded, and to the re-discovery and collection of further specimens of other rare species already noted in small quantities. The paper described a large number of the localities examined, and gave the general occurrences of minerals in the area.

Colloidal gold as a colouring principle in minerals was the subject of the next paper, by Dr. J. Newton Friend and Mr. J. P. Allchin, and four subsequent papers dealt with interesting local mineral occurrences in the British Isles, Natal, and Ontario.

NON-FERROUS METALLIC ORES

The Minister of Supply has appointed a departmental committee to consider whether an increased production of non-ferrous metallic ores in the United Kingdom is desirable and practicable, and to make recommendations. The members of the committee are:—Sir William Larke (chairman), Dr. C. G. Cullis, Mr. Arthur Deakin, Mr. J. Stanley Holmes, M.P., and Mr. S. S. Taylor. Professor J. A. S. Ritson, Mr. T. Eastwood, and Dr. M. Macgregor will act as assessors to the committee. The secretary of the committee, to whom all communications should be addressed is Mr. W. C. C. Rose, of the Geological Survey of Great Britain, Exhibition Road, South Kensington, London, S.W.7.

PERSONAL NOTES

MR. W. C. THORNE, O.B.E., has been elected a director of the Scottish Grain Distilling Co., Ltd., Glasgow.

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SIR WALTER ST. DAVID JENKINS, C.B., C.B.E., has been appointed to the board of directors of Elliott Brothers (London), Ltd., the well-known manufacturers of scientific instruments, Century Works, Lewisham, S.E.13.

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MR. G. A. COWIE, M.A., B.Sc., F.I.C., chief agricultural adviser to Potash, Ltd., will receive the degree of Doctor of Philosophy (in science) from the University of Aberdeen at a graduation ceremony on April 4. The degree has been awarded for a special thesis dealing with certain nutritional aspects of the potato plant.

* * * *

MR. F. L. GOODALL, chief chemist at the Bradford works of the Geigy Colour Co., Ltd., has been awarded the Gold Medal of the Society of Dyers and Colourists. The medal was presented to him at the dinner of the Society in Bradford

Mr. F. L. Goodall.

last week. Mr. Goodall's work and researches have resulted in many important savings and technical improvements in the industry with which he is associated. He is an examiner of the City and Guilds of London Institute.

OBITUARY

MR. WALTER SCOTT JOSEPHSON, who died suddenly in New York last week, was formerly managing director of Carbo-Ice Industries, Ltd., of Clement's Lane, London, and Treforest Estate, South Wales.

* * * *

MR. JOSEPH BIBBY, one of the founders of James Bibby and Sons, Ltd., seed crushers and oilcake manufacturers of Liverpool, died on Monday, at Birkenhead, at the age of 89. He and his younger brother James first established themselves as manufacturers of feeding stuffs in Lancaster in 1878.

* * * *

MR. CHARLES FREDERICK SPENCER, the chairman of the Leeds Fireclay Company, which many years ago acquired various undertakings engaged in the manufacture of the products in which the company specialises, died last week. Mr. Spencer was also chairman of Coal Conversion, Ltd., to which the Leeds Fireclay Company transferred its interest in the British rights of the Plassmann process of low-temperature carbonisation of coal.

MR. T. J. MORGANS, of Dowlais, for many years analytical chemist at the Dowlais Works, died last week. He had been a director of the Dowlais Gas Company for a long period and took a prominent part in local activities.

Mastic Asphalt Floor Covering

Resistance to Engraving Acid

COMMENTING on the article "From a Works Maintenance Note-Book" (THE CHEMICAL AGE, *42*, 1,076, 81-2), Victor Clough, writing in *The Newspaper World* (March 2, 1940), remarks on the merits of mastic asphalt as a jointless acid-proof floor covering and gives a pertinent account of his experience with this material in the engraving and printing industry a few years ago.

"We had been troubled," he says, "by the leakage of nitric acid which dripped from the etching machines and found its way through cracks in the concrete floor to the ceiling beneath and, of course, its journey did not stop there. I took advice and laid down a shallow lead-lined bath or tray with a rounded lip or border about two inches high, to take four machines. This lead was characterised as acid-proof. Later it was anathematised because its characteristics were not true to claim. Some of the lead stood up to the acid, but it ate away other parts and after a time the tray was a sorry mess.

"Then I experimented with samples of mastic asphalt and found a brand that did resist a sustained attack by nitric acid. Consequently, I replaced the lead with the asphalt and the alternative was quite a success.

"Some years later the entire printing establishment, and, with it, the process engraving department, was moved to new premises. Profiting by past experience, I again had an asphalt tray laid down, and this likewise answered requirements."

Synthetic Tartaric Acid

Conversion of Maleic Acid and Malic Acid

UNDER the catalytic influence of an osmium compound maleic acid can be converted into tartaric acid in good yield when potassium permanganate or hydrogen peroxide is used as the oxidising agent. Maleic acid has been steadily falling in price for some years. It first appeared on the market at a price sufficiently low to make it of commercial interest (*e.g.*, in the synthetic resin industry) after it became available in substantial tonnage as a by-product in the oxidation of naphthalene to phthalic anhydride. To-day it is also produced in the United States by oxidation of benzene.*

The commercial synthesis of tartaric acid is now brought theoretical yield by peroxide-oxidation of malic acid when using a catalyst in the shape of a heavy metal (chromium, iron or titanium) or a metal oxide. Malic acid is readily formed from maleic acid by moderate heating, and this reaction is apparently also catalysed by one of the above oxides. In the process as outlined in French Pat. 849,852, 1939 (Goldstein and Bonn), a solution of 200 kg. maleic acid in 5,000 litres water containing 10 gr. titanium oxide was heated to 100°-120° C. to effect complete conversion to malic acid.

Hydrogen peroxide or an alkali or alkali earth metal peroxide was then added to the heated solution in the quantity theoretically required for oxidation to tartaric acid, when the latter was obtained in a yield of 180 kg. together with traces of oxalic acid and succinic acid. The same process is applicable to the oxidation of succinic acid to tartaric acid.

* Chemical Age," May 13, 1939, p. 349.

THE DRIVE FOR EXPORT TRADE

Trade Press Conference

A CONFERENCE of members of the trade and technical Press, convened by the Export Council, was held last week at the offices of the Board of Trade. Mr. F. D'Arcy Cooper (chairman of Lever Bros. and Unilever, Ltd.) presided, and was supported by Sir Clive Baillieu (chairman of the National Smelting Co., Ltd.), Mr. S. R. Beale (past-president of the Association of British Chambers of Commerce), and other members of the Export Council.

Mr. D'Arcy Cooper said that they must organise industry so as to be able to know what were its requirements as regards raw materials. They must organise before they considered what they could export. In war-time they had very much to face up to the difficulty of raw material supply, and must see that there was equal justice for all manufacturers. The aim of the Export Council was to establish export groups for all trades which did export business. The Export Council would co-operate with such groups, and delegate to them the detailed work with individual firms which was involved in the national export drive. Existing trade organisations and chambers of commerce would, it was hoped, take the initiative in forming these groups, but affiliation to any group must be open to all on equal terms.

The White Paper

In the White Paper, continued Mr. D'Arcy Cooper, he would call their attention to what seemed to the Export Council to be a most important point, viz. :—" His Majesty's Government have now *approved* the following statement setting out the aims and plan of work of the Council." Although that did not mean compulsion, it meant something very near it. It meant something very near compulsion for those who did not join any export group. The formation of those groups was, above all, very necessary. The Government was prepared to give help to export trade, and they hoped that those export groups, when formed, would even be a help in time of peace. They did not want in the middle of a war to build up a fresh organisation, but to build on existing organisations. They preferred measures which involved the least interference with the existing channels of trade or with established practices and principles, when making arrangements for war-time export trade.

Continuing, Mr. D'Arcy Cooper said that the Export Council had been asked about a subsidy being required or the likelihood of one being granted for the assistance of war-time export trade. There was no question of a subsidy. Once they told the people that there was any chance of a subsidy, then the people would hang back. He was quite aware of the statement in the White Paper that the Export Council placed no limit to the expedients they would be prepared to consider, should exceptional circumstances arise in particular trades or even over the whole field, but they did not think the time had come, or would come in the near future, when they had to go to the expedients they said they might go to.

Control of Raw Materials

One of the major problems to-day lay in the control of raw materials. The national interest required a degree of preference for exports which could only be assured by the organisation of industry. Unless every individual firm joined its respective group it would be impossible to give a fair sharing-out of raw materials. In other words, a firm must join its own organisation or its own export group. To the people who said, in effect, that they wanted to remain individualists, the Export Council said that they could not accept that principle to-day. The problems of to-day must be solved by taking each industry by itself, not each individual firm. The question had been raised with the Council as to the control of groups. In most cases, he expected, the chairman of a group would be a member of the industry concerned, but if groups wanted an independent chairman the Export Council might be able to recommend one, although they did not wish to interfere with trade any more than they could help.

Questions were then put by members of the Press and answered variously by Mr. D'Arcy Cooper and other members of the Council. A question as to whether the Council were considering any plans for joint marketing elicited the reply that proposals of that nature must come from the groups. It would be conceited of the Export Council to try and interfere with the technique of any particular trade. In reply to another question, it was stated that intimate details of any particular trade would be discussed with the chairman of the group. Asked whether it was possible to state how any specific trades were getting on with their organisation, the chairman said that reports as to that would be available from time to time. Some trades were, in fact, holding important meetings in the immediate or very near future.

Other replies included the following: Groups would be elected in a perfectly democratic way from the rank and file in conjunction with their trade organisation. If a manufacturer said he had difficulty in selling his goods abroad, possibly because of high prices of raw material or high shipping charges, his difficulty would be referred to the Export Council for their advice and, if necessary, action. As to the Government being willing to provide currency for obtaining raw material from abroad when there was not enough here, the question of imported raw materials was very much in the minds of the Council.

A Sorting-out Process

A lot of things, which at present appeared to be difficulties, would sort themselves out when the war-time export trade got under way, and there were some things which it would be better to keep quiet about until that sorting-out process had been accomplished. They did not want to come out with any flaming headlines which might have the effect of making the public nervous. The Export Council still thought the home market would have enough of everything to go on with, but obviously they could not get any from the Services, therefore any extra required for export trade must come from the home market. But there would be no actual cutting-off of supplies from the public.

As far as iron and steel were concerned, manufacturers' raw material difficulties would be dealt with through the various directors, say, the director of screws, the director of nuts, the director of sheet iron, and so on, and manufacturers would get the quantities which those directors allocated.

The Export Council were aware that in some industries there were a number of organisations, but in time the Council hoped to approach all the associations in any particular trade and get them together. A question as to how merchant exporters are to be organised, in view of the fact that they are responsible for some 65 per cent. of the total exports from this country, brought the reply from the chairman that he wanted advice from the export groups how to do it. Asked whether the national export groups would include both manufacturers and merchants, a member of the Council said " probably," as they did recognise the importance of merchant exporters.

Another Press representative raised the question of the exporting of " services " as, for example, the exporting of the services of a skilled engineer, who went abroad, say, for a period of years. The Council already had that question under consideration. All those things had to be tackled, but the solutions had largely to be found by the trades themselves.

General News—From Week to Week

THE NEW CLYDESIDE factory of Titanine, Ltd., manufacturers of aeroplane dopes, cellulose, and synthetic lacquer, was opened recently.

MESSRS. G. A. HARVEY AND CO. (LONDON), LTD., of Greenwich Metal Works, London, S.E.7, announce that they have reopened their West End offices at 58 Victoria Street, S.W.1 (Tel. : Victoria 4963.)

DAMAGE ESTIMATED at between £1,500 and £2,000 was caused as the result of a fire on March 9 at the Royal Starch Works, Falside, Paisley, of Messrs. Brown and Polson, starch and cornflour manufacturers. The premises affected were on the top floor of a six-storey building.

THE OFFICE OF THE ROYAL SOCIETY will return to the Society's Apartments in Burlington House on March 18, 1940, and the Library is to be re-opened. Communications, therefore, should be directed to The Royal Society, Burlington House, W.1, on and after March 16.

CONSIDERABLE UNEASINESS has been aroused in London by the recent large re-exports of tin and rubber from the United States to the Pacific ports of the U.S.S.R. It is believed that a proportion of these shipments have found their way to Germany by the Trans-Siberian Railway. It has been suggested that to stop this evasion of the British blockade steps might be taken to restrict Malayan tin and rubber shipments to the U.S.A.

CONSIDERAELE DAMAGE WAS CAUSED BY FIRE at the oilcake mills and warehouse of Crosfield's Oil and Cake Co., Ltd., Vauxhall Road, Liverpool, on the night of March 8, when hundreds of tons of oilcakes and meal were destroyed. More extensive loss was avoided by the action of workmen of Crosfield's, who removed barrels of oil from portions of the premises abutting the blazing building to places of comparative safety.

THE JOINT GATHERING of members of the Nottingham sections of the Society of Chemical Industry and the Institute of Chemistry, which was held at the Welbeck Hotel, Nottingham, last week, was a big success and proved exceedingly enjoyable, thanks largely to the excellent arrangements made by Mr. J. Ratcliffe, local secretary of the Institute. Dr. L. Hunter, chairman of the East Midland Section of the Institute, was in the chair. An informal dinner was held, after which an address on "Hormones" was given by Professor E. C. Dodds.

THE SCHEDULE to the Trading with the Enemy (Specified Persons) Order has been further amended with the addition of the names of the following concerns : Bayer Pharma Co., 138 Kiangse Road, Shanghai, and all branches in China; Continental Fabrica Espanola del Caucho, Segasta 15, Madrid, and all branches in Spain; "Defag" Deutsche Farben Handelsgesellschaft (Waibel and Co.), and Deutsche Stickstoff Handelsgesellschaft, Krauch and Co., both of 261 Szechuen Road, Shanghai, and all their branches in China; Deutsche Goldund Silber Scheideanstalt (vormals Rossler), 133 Yuen Ming Yuen Road, Shanghai, and the following at the same address : W. Haeusing, Huepeden and Co., Scherings, Ltd., Jann and Co., W. Koreska; Fanto Petroleum Maatschappij N.V. Spuistraat 210, Amsterdam, Holland; E. Merck Chemical Co., Ltd., 668 Szechuen Road, Shanghai. One firm has been deleted from the schedule and 108 have been added.

Foreign News

ON THE PROPOSAL of the Yugoslavian Minister of Commerce and Industry, sulphur and flowers of sulphur will be exempt from all import duties for a period of six months.

A FACTORY IS BEING ERECTED by Yugoslavian interests in the district of Bossanki Novi (served by the Zagreb-Banialuka railway) to turn out rayon, staple fibre and tanning materials.

MANUFACTURE OF DETONATORS will be undertaken in a new factory to be built at Pancevo (Yugoslavia) by the Osvit Company of Belgrade, makers of pyrotechnic products.

WITH THE AVOWED intention of competing with the American "Nylon," research work is being continued on a new fibre material, described as "Synthesis No. 1," which was recently invented by a young assistant professor at the Kyoto Imperial University, Japan. It is admitted, however, that the new fibre has several weak points and it is with the intention of eliminating these that research is being continued.

MINERAL OILS in the former Austrian territory are now compulsorily tinted with sudan violet (27 grams per ton). Exemption from the order is only granted on urgent technical grounds.

ACCORDING TO DATA compiled by the United States Bureau of Mines the total output of benzol in the United States for the calendar year 1939 was 102,470,000 gallons. This compares with a total production of 74,094,246 gallons for 1938.

THE NORWEGIAN CHEMICAL MANUFACTURING FIRMS, Vera Fabrikker and Jotun Kjemiske Fabrik, concluded the past year with good results. The former firm increased its stock capital from 500,000 to 1,000,000 kr. and paid 10 per cent. dividend on the increased capital, while the latter increased its capital from 85,000 to 170,000 kr. fully paid up and offered investors an ordinary dividend of 10 per cent., plus an additional bonus of 10 per cent., both on the expanded capital.

THE BUREAU OF MINES, of the Canadian Department of Mines and Resources, has just issued a detailed Physical and Chemical Survey of the coals in the Inverness County Coalfield, Cape Breton, Nova Scotia. The investigation was conducted by the staff of the Fuel Research Laboratories. Coals from the four collieries in the coalfield actually operating were examined, and they were found to be all low rank bituminous coals bordering on the sub-bituminous class.

IMPORTS INTO U.S.A. of anhydrous sodium sulphate showed a decline in 1939. A feature of the trade was the entry of France as a supplier in the closing months of the year to the extent of 39 long tons. Imports of the anhydrous material from Germany fell from 13,568 tons in 1937, to 5,766 tons in 1938, and 4,506 tons in 1939. No supplies are recorded from France in the period 1936-8. Glauber salt imports also fell to a low level, Germany being the only supplier, with 418 tons. The war has had, however, no apparent immediate effect on the delivery of salt cake to the U.S.A. during the last quarter of 1939 in so far as total tonnage was concerned. Receipts during the final quarter totalled 39,101 short tons out of the total of 148,795 tons reported for the year. There was, however, a marked shift in sources of supply, Belgium (25,607 tons) having regained her previous position as second in importance to Germany (103,260 tons). Supplies from Chile fell from 26,079 tons in 1938 to 1,503 tons in 1939, while the United Kingdom makes a welcome first appearance as a supplier with 2,244 tons and imports from Canada rose from 8,262 to 9,518 tons.

Forthcoming Events

A JOINT MEETING of the Yorkshire Section, Society of Chemical Industry, with the North-Eastern Branch of the Institute of Sewage Purification will be held on March 18, at 6.0 p.m. in the Hotel Metropole, King Street, Leeds. A paper on "The Public Health (Drainage of Trade Premises) Act, 1937," will be read by Mr. J. H. Garner, B.Sc., F.I.C., chief inspector, West Riding Rivers Board. The directors of the Leeds Fireclay Co., Ltd., have kindly invited those attending this meeting to visit their works in the afternoon, where they will be shown the manufacture of sanitary ware, glazed bricks and filter goods. For the convenience of those wishing to visit these works a special bus will leave the Hotel Metropole at 2.30 p.m.

With regard to the conference held on March 9 in the Lecture Hall of the Pharmaceutical Society, we are asked by the British Association of Chemists to point out that the notice convening the meeting was signed by the Association of Scientific Workers, and the British Association of Chemists, through a misunderstanding on the part of the Association of Scientific Workers. The British Association of Chemists did not give its consent to the joint notice and is not in any way connected with the calling of the conference.

The Secretary of the Association of Scientific Workers has written a letter to the Chairman of the Council of the B.A.C., expressing the regrets of the executive committee of the A.S.W. for the misunderstanding and requesting a meeting of the executives of the two Associations, considering that by that means the difficulties may most speedily be resolved.

Weekly Prices of British Chemical Products

ACTIVE trading conditions are reported from most sections of the market with heavy chemicals in sustained demand. So far as values are concerned there have been no outstanding changes, prices generally continuing on a steady to firm basis. In the potash group quotations are subject to day to day fluctuations according to the supply position available, spot parcels being in brisk demand. A good seasonal inquiry is reported for fertiliser chemicals and items such as acetic, tartaric and citric acids and salammoniac are in request. Business in the coal tar products has been somewhat on the quiet side, prices remaining steady with a firm undertone.

MANCHESTER.—A steady general movement of supplies of heavy chemical products into consumption in the Lancashire district has been reported by traders on the Manchester market during the past week, with a wide range of products for the textile and allied trades, both locally and in the Yorkshire district, being called for in steady quantities. New bookings during the past week have for the most part been on a moderate scale. Values of chemicals generally are on a firm basis, with a strong undertone reported especially in the case of the majority of the potash compounds, spot offers of which are scarce. With one or two exceptions active conditions are reported in the by-products section so far as the call for contract supplies is concerned.

GLASGOW.—The Scottish heavy chemical market shows increasing signs of seasonal activity, with considerable demand for paint trade materials, at very firm prices. A considerable amount of business has been done in starch, glucose and dextrines, and it is hoped that this will continue. Copper sulphate has been increased £1 per ton.

Price Changes

Rises: Naphthalene, Pitch, Salammoniac, Tartaric Acid (Manchester), Xylol.

Falls: Potassium Prussiate.

* In the case of certain products, here marked with an asterisk, the market is nominal, and the last ascertainable prices have been scheduled. At present all intermediates are included under this head.

General Chemicals

Acetic Acid.—Maximum prices per ton: 80% technical, 1 ton £34 15s.; 10 cwt./1 ton, £35 15s.; 4/10 cwt., £36 15s.; 80% pure, 1 ton, £36 15s.; 10 cwt./1 ton, £37 15s.; 4/10 cwt., £38 15s.; commercial glacial, 1 ton, £44; 10 cwt./1 ton, £45; 4/10 cwt., £46; delivered buyers' premises in returnable barrels. £4 per ton extra if packed and delivered in glass.

Acetone.—Maximum prices per ton. 50 tons and over, £49 10s.; 10/50 tons, £50; 5/10 tons, £50 10s.; 1/5 tons, £51; single drums, £52, delivered buyers' premises in returnable drums or other containers having a capacity of not less than 45 gallons each; delivered in containers of less than 45 gallons but not less than 10 gallons £10 10s. per ton in excess of maximum prices; delivered in containers less than 10 gallons each £10 10s. per ton in excess of maximum prices, plus a reasonable allowance.

***Alum.**—Loose lump, £8 7s. 6d. per ton d/d.

***Aluminium Sulphate.**—About £8 per ton f.o.b. Liverpool.

Ammonia Anhydrous.—99.95%, 1s. to 2s. per lb., according to quantity in loaned cylinders, carriage paid; less for important contracts.

Ammonium Carbonate.—£32-£36 per ton d/d in 5 cwt. casks.

Ammonium Chloride.—Grey galvanising, £18 per ton, in casks, ex wharf. See also Salammoniac.

***Antimony Oxide.**—£68 per ton.

Arsenic.—99/100%, about £25 per ton, ex store.

Barium Chloride—98/100%, prime white crystals, £11 10s. 0d. to £13 per ton, bag packing, ex works; imported material would be dearer.

Bleaching Powder.—Spot, 35/37% £10 per ton in casks, special terms for contract.

Borax, Commercial.—Granulated, £20 10s. per ton; crystal, £21 10s.; powdered, £22; extra finely powdered, £23; B.P. crystals, £29 10s.; powdered, £30; extra fine £31 per ton for ton lots in free 1-cwt. bags, carriage paid in Great Britain. Borax Glass, lump, £64; powder, £65; in tin-lined cases for home trade only, packages free, carriage paid in Great Britain.

Boric Acid.—Commercial granulated, £31 10s. per ton; crystal £35 10s.; powdered, £36 10s.; extra finely powdered, £38 10s.; large flakes, £47; B.P. crystals, £43 10s.; powdered, £44 10s.; extra fine powdered, £46 10s. per ton for ton lots, in free 1-cwt. bags, carriage paid in Great Britain.

Calcium Bisulphite.—£7 10s. per ton f.o.r. London.

***Calcium Chloride.**—GLASGOW: 70/75% solid, £5 12s. 6d. per ton ex store.

Charcoal Lump.—£10 to £12 per ton, ex wharf. Granulated £11 to £14 per ton according to grade and locality.

***Chlorine, Liquid.**—£19 15s. per ton, d/d in 16/17 cwt. drums (3-drum lots); 4½d. per lb. d/d station in single 70-lb. cylinders.

Chrometan.—Crystals, 4d. per lb.; liquor, £19 10s. per ton d/d station in drums. GLASGOW: Crystals 4d. per lb. in original barrels.

Chromic Acid.—1s. per lb., less 2½%; d/d U.K. GLASGOW: 1s. 0½d. per lb. for 1 cwt. lots.

Chromic Oxide.—1s. 2d. per lb., d/d U.K.

Citric Acid.—1s. 2d. per lb. MANCHESTER: 1s. 3d.

***Copper Sulpate.**—Nominal.

Cream of Tartar.—100%, £6 2s. to £6 7s. per cwt., less 2½%. Makers' prices nominal, imported material about £170 per ton to quantity, d/d in sellers' returnable casks; imported material would be dearer.

Formic Acid.—85%, £44 10s. per ton for ton lots, carriage paid, carboys returnable; smaller parcels quoted at 46s. 6d. to 49s. 6d. per cwt., ex store.

Glycerine.—Chemically pure, double distilled, 1,260 s.g., in tins, £3 10s. to £4 10s. per cwt. according to quantity; in drums, £3 2s. 6d. to £3 16s. 0d. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

Hexamine.—Technical grade for commercial purposes, 1s. 4d. per lb.; free-running crystals are quoted at 1s. 7½d. to 1s. 10½d. per lb.; carriage paid for bulk lots.

Hydrochloric Acid.—Spot, 6s. 1½d. to 8s. 7½d. carboy d/d according to purity, strength and locality.

Iodine.—Resublimed B.P., 9s. 2d. to 13s. per lb., according to quantity.

Lactic Acid.—(Not less than ton lots). Dark tech., 50% by vol., £30 10s. per ton; 50% by weight, £35; 80% by weight, £60; pale tech., 50% by vol., £36; 50% by weight, £42; 80% by weight, £67. One ton lots ex works; barrels returnable.

Lead Acetate.—White, £48 to £50, ton lots.

Lead Nitrate.—About £44 per ton d/d in casks.

Lead, Red.—English, 5/10 cwt., £41 10s.; 10 cwt. to 1 ton, £41 5s.; 1/2 tons, £41; 2/5 tons, £40 10s.; 5/20 tons, £40; 20/100 tons, £39 10s.; over 100 tons, £39 per ton, less 2½ per cent., carriage paid; non-setting red lead, 10s. per ton dearer in each case; Continental material, £1 per ton cheaper.

Lead, White.—Dry English, less than 5 tons, £51; 5/15 tons, £47; 15/25 tons, £46 10s.; 25/50 tons, £46; 50/200 tons, £45 10s. per ton, less 5% carriage paid; Continental material, £1 per ton cheaper. Ground in oil, English, 1/5 cwt., £59 10s. 5/10 cwt., £58 10s.; 10 cwt. to 1 ton, £58; 1/2 tons, £56 10s.; 2/5 tons, £55 10s.; 5/10 tons, £53 10s.; 10/15 tons, £52 10s.; 15/25 tons, £52; 25/50 tons, £51 10s.; 50/100 tons, £51 per ton, less 5% carriage paid. Continental material £2 per ton cheaper.

Litharge.—1 to 2 tons, £41 per ton.

Magnesite.—Calcined, in bags, ex works, about £12 to £15 per ton.

Magnesium Chloride.—Solid (ex wharf), £12 per ton.

***Magnesium Sulphate.**—Commercial, £5 10s. per ton, ex wharf.

Mercury Products.—Controlled prices for 1 cwt. quantities: Bichloride powder, 9s 1d.; bichloride lump, 9s. 8d.; bichloride ammon. powder, 10s. 7d.; bichloride ammon. lump, 10s. 5d.; mercurous chloride, 10s. 11d.; mercury oxide, red cryst., B.P., 12s. 3d.; red levig. B.P., 11s. 9d.; yellow levig. B.P., 11s. 7d.

***Methylated Spirit.**—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s 6d to 3s. Spirit 64 O.P. is 1d more in all cases and the range of prices is according to quantities.

***Nitric acid.**—Spot, £19 to £26 per ton, according to strength, quantity and destination.

Oxalic Acid.—From £60 per ton for ton lots, carriage paid, in 5-cwt. casks; smaller parcels would be dearer; deliveries slow.

***Paraffin Wax.**—Nominal.

Potash, Caustic.—Liquid, £30 to £35 per ton, according to quantity.

Potassium Bichromate.—5¾d. per lb. carriage paid. GLASGOW: 5¾d. per lb., carriage paid.

Potassium Chlorate.—Imported powder and crystals, ex store London, 10d. to 1s. per lb.

Potassium Iodide.—B.P., 8s. to 11s. 2d. per lb., according to quantity.

Potassium Nitrate.—Small granular crystals, £26 to £29 per ton ex store, according to quantity.

Potassium Permanganate.—B.P., 1s. 4½d. to 1s. 5½d. per lb.; commercial, £7 9s. 6d. to £8 1s. 6d. per cwt., according to quantity, d/d.

Potassium Prussiate.—Yellow, about 1s. 2d. to 1s. 5d. per lb., supplies scarce.

Salammoniac.—Dog-tooth crystals, £45 per ton; medium, £43 10s.; fine white crystals, £16 10s.; in casks, ex store.
Soda Ash.—Light 98/100%, £6 2s. 6d. per ton f.o.r. in bags.
Soda, Caustic.—Solid, 76/77% spot, £14 per ton d/d station.
Soda Crystals.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.
Sodium Acetate.—£37 to £40 per ton, ex wharf.
Sodium Bicarbonate.—About £10 10s. to £11 10s. per ton, in bags.
Sodium Bichromate.—Crystals, 4¾d. per lb., net d/d U.K. with rebates for contracts. GLASGOW: 5¾d. per lb., carriage paid.
Sodium Bisulphite Powder.—60/62%, £16 per ton d/d in 2-ton lots for home trade.
Sodium Carbonate Monohydrate.—£20 per ton d/d in minimum ton lots in 2 cwt. free bags.
Sodium Chlorate.—£32 to £39 per ton, d/d, according to quantity.
Sodium Hyposulphite.—Pea crystals, £16 17s. 6d. per ton for 2-ton lots; commercial, £13 10s. per ton. MANCHESTER: Commercial, £13; photographic, £16 10s.
Sodium Iodide.—B.P., for not less than 28 lb., 8s. 10d. per lb.; for not less than 7 lb., 10s. 9d. per lb.
***Sodium Metasilicate.**—£14 5s. per ton, d/d U.K. in cwt. bags.
Sodium Nitrate.—Refined, £9 10s. to £10 per ton for 6-ton lots d/d.
Sodium Nitrite.—£18 15s. per ton for ton lots.
Sodium Perborate.—10%, £4 10s. per cwt. d/d in 1-cwt. drums.
Sodium Phosphate.—Di-sodium, £16 to £17 per ton delivered for ton lots. Tri-sodium, £18 per ton delivered per ton lots.
Sodium Prussiate.—From 6d. per lb. ex store.
Sodium Silicate.—£8 2s. 6d. per ton, for 4-ton lots.
***Sodium Sulphate (Glauber Salts).**—£4 10s. per ton d/d.
Sodium Sulphate (Salt Cake).—Unground spot, £4 1s. per ton d/d station in bulk. MANCHESTER: £4.
Sodium Sulphate.—Solid 60/62%, Spot, £13 15s. per ton d/d in drums; crystals, 30/32%, £9 10s. per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £13; crystals, £9 15s.
***Sodium Sulphite.**—Pea crystals, spot, £16 per ton d/d station in kegs.
***Sulphur Precip.**—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
Sulphuric Acid.—168° Tw., £5 7s. to £5 17s. per ton; 140° Tw. arsenic-free, £3 15s. to £4 5s.; 140° Tw., arsenious, £3 7s. 6d.
Tartaric Acid.—1s. 6¼d. per lb., less 5%, carriage paid for lots of 5 cwt. and upwards. Makers' prices nominal; imported material 2s. 3d. to 2s. 6d. per lb., ex wharf. MANCHESTER: 1s. 7d. per lb.
Zinc Oxide.—Maximum prices: White seal, £30 17s. 6d. per ton; red seal, £28 7s. 6d. d/d; green seal, £29 17s. 6d. d/d buyers' premises.
Zinc Sulphate.—Tech., about £25, carriage paid, casks free.

Rubber Chemicals

Antimony Sulphide.—Golden, 9¼d. to 1s. 6d. per lb., according to quality. Crimson, 1s. 7½d. to 1s. 10½d. per lb.
Arsenic Sulphide.—Yellow, 1s. 6d. to 1s. 8d. per lb.
Barytes.—Imported material £6 to £9 per ton according to quality.
Carbon Black.—About 7d. to 7½d. per lb., according to quantity.
Carbon Disulphide.—£29 to £34 per ton, according to quantity, in free returnable drums.
Carbon Tetrachloride.—£48 to £53 per ton, according to quantity, drums extra.
India-rubber Substitutes.—White, 5¾d. to 6¾d. per lb.; dark 5½d. to 6d. per lb.
Lamp Black.—Imported material is quoted at about £35 to £40 per ton.
Lithopone.—30%, £18 17s. 6d. per ton; 60%, £31 to £32 per ton. Imported material would be dearer.
Sulphur.—Finely powdered, about £15 per ton, delivered.
Sulphur Chloride.—6d. to 8d. per lb., according to quantity.
Vegetable Black.—£35 per ton upwards; 28/30%, £15 10s. 0d.; 60%, £29, delivered buyers' premises.
Vermilion.—Pale or deep, 8s. 5d. per lb., for 7 lb. lots.
Zinc Sulphide.—About £63 per ton ex works.

Plus 5% War Charge.

Nitrogen Fertilisers

Ammonium Sulphate.—Per ton in 6-ton lots d/d farmer's nearest station, March/June, £9 6s.
Calcium Cyanamide.—£12 10s. for 5-ton lots per ton net f.o.r. or ex store, London. Supplies small.
"Nitro-Chalk."—£8 18s. per ton, in 6-ton lots, d/d farmer's nearest station, January/June delivery.
Concentrated Complete Fertilisers.—£11 18s. to £12 4s. per ton in 6-ton lots, d/d farmer's nearest station.
Ammonium Phosphate Fertilisers.—£11 14s. to £16 6s. per ton in 6-ton lots, d/d farmer's nearest station.

Coal Tar Products

Benzol.—Industrial (containing less than 2% of toluol), 2s. to 2s. 1d. per gal., ex works, nominal.
Carbolic Acid.—Crystals, 1s. 1d. per lb.; Crude, 60's, 3s. 7d. to 3s. 9d., acording to specification. MANCHESTER: Crystals, 1s. 3d. per lb., d/d; crude, 4s. to 4s. 3d. naked, at works.
Creosote.—Home trade, 5d. per gal., f.o.r., makers' works; exports 6d. to 6¼d. per gal., according to grade. MANCHESTER: 4¾d. to 7d.
Cresylic Acid.—99/100%, 2s. 11d. to 3s. 3d. per gal., according to specification. MANCHESTER: Pale, 99/100%, 3s.
Naphtha.—Solvent, 90/100°, 1s. 8d. to 1s. 9d. per gal.; solvent, 95/160°, 1s. 11d. to 2s., naked at works; heavy 90/190°, 1s. 3d. to 1s. 5d. per gal., naked at works, according to quantity. MANCHESTER: 90/160°, 1s. 9d. to 1s. 11d. per gal.
Naphthalene.—Crude, whizzed or hot pressed, £15 per ton; purified crystals, £20 per ton in 2-cwt. bags; flaked, £21 5s. per ton. Fire lighter quality, £6 to £7 per ton ex works. MANCHESTER: Refined, £25.
Pitch.—Medium, soft, 40s. per ton, f.o.b. MANCHESTER: 37s. 6d., f.o.b. East Coast.
Pyridine.—90/140°, 19s. to 20s. per gal.; 90/160°, 16s. to 18s. 6d.; 80/180°, 3s. 9d. to 4s. 6d. per gal., f.o.b. MANCHESTER: 17s. 6d. to 20s. per gal.
Toluol.—90%, 2s. 3d. per gal.; pure, 2s. 5d., nominal. MANCHESTER: Pure, 2s. 5d. per gal., naked.
Xylol.—Commercial, 2s. 9d. per gal.; pure, 2s. 11d. MANCHESTER: 2s. 11d. per gal.

Wood Distillation Products

Calcium Acetate.—Brown, £8 to £8 10s. per ton; grey, £12 to £13 MANCHESTER: Grey, £14.
Methyl Acetone.—40.50%, £42 per ton.
Wood Creosote.—Unrefined, 1s. to 1s. 3d. per gal., according to boiling range.
Wood Naphtha, Miscible.—3s. 7d. to 4s. per gal.; solvent, 4s. to 4s. 6d. per gal.
Wood Tar.—£5 to £6 per ton, according to quality.

*Intermediates and Dyes

Aniline Oil.—Spot, 8d. per lb., drums extra, d/d buyer's works.
Aniline Salts.—Spot, 8d. per lb., d/d buyer's works, casks free.
Benzaldehyde.—1s. 10d. per lb., for cwt. lots, net packages.
Benzidine, HCl.—2s. 7d. per lb., 100% as base, in casks.
Benzoic Acid, 1914 B.P. (ex toluol).—1s. 11d. per lb., d/d buyer's works.
m-**Cresol** 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-**Cresol** 30/31° C.—8d. to 9d. per lb. in ton lots.
p-**Cresol** 34/35° C.—1s. 8d. to 1s. 9d. per lb. in ton lots.
Dichloraniline.—2s. 1¾d. to 2s. 7d. per lb.
Dimethylaniline.—Spot, 1s 7½d. per lb., package extra.
Dinitrobenzene.—8d. per lb.
Dinitrochlorbenzene, Solid.—£79 5s. per ton.
Dinitrotoluene.—48/50° C., 9d. per lb.; 66/68° C., 11½d.
Diphenylamine.—Spot, 2s. 3d. per lb.; d/d buyer's works.
Gamma Acid.—Spot, 4s. 4½d. per lb. 100%, d/d buyer's works.
H Acid.—Spot, 2s. 7d. per lb.; 100%, d/d buyer's works.
Naphthionic Acid.—1s. 10d. per lb.
β-**Naphthol.**—£97 per ton; flake, £94 8s. per ton.
α-**Naphthylamine.**—Lumps, 1s. 1d. per lb.
β-**Naphthylamine.**—Spot, 3s. per lb.; d/d buyer's works.
Neville and Winther's Acid.—Spot, 3s. 3½d. per lb. 100%.
o-**Nitraniline.**—4s. 3½d. per lb.
m-**Nitraniline.**—Spot, 2s. 10d. per lb. d/d buyer's works.
p-**Nitraniline.**—Spot, 1s. 10d. to 2s. per lb., in 90-gal. drums.
Nitrobenzene.—Spot, 4½d. to 5½d. per lb., in 90-gal. drums, drums extra, 1-ton lots d/d buyer's works.
Nitronaphthalene.—10d. per lb.; P.G., 1s. 0½d. per lb.
Sodium Naphthionate.—Spot, 1s. 11d. per lb. 100%, d/d buyer's works.
Sulphanilic Acid.—Spot, 8¾d. per lb. 100%, d/d buyer's works.
o-**Toluidine.**—11d. per lb., in 8/10 cwt. drums, drums extra.
p-**Toluidine.**—2s. per lb., in casks.
m-**Xylidine Acetate.**—4s. 5d. per lb., 100%.

Latest Oil Prices

LONDON.—March 14.—For the period ending March 30, per ton, net, naked, ex mill, works or refinery, and subject to additional charges according to package and location of supplies:—LINSEED OIL, raw, £42 10s. RAPESEED OIL, crude, £44 5s. COTTONSEED OIL, crude, £31 2s. 6d.; washed, £34 5s.; refined edible, £35 12s. 6d.; refined deodorised, £36 10s. SOYA BEAN OIL, crude, £33; refined deodorised, £37. COCONUT OIL, crude, £28 2s. 6d.; refined deodorised, £31 7s. 6d. PALM KERNEL OIL, crude, £27 10s.; refined deodorised, £30 15s. PALM OIL, refined deodorised, £33. GROUNDNUT OIL, crude, £35 10s.; refined deodorised, £40. WHALE OIL, crude hardened, 42 deg., £30 10s.; refined hardened, 42 deg., £33. ACID OILS.—Groundnut, £24; soya, £22; coconut and palm kernel, £22 10s. ROSIN, 25s. to 35s. per cwt., ex wharf, according to grade. TURPENTINE, 54s. 9d. per cwt., spot, American including tax, ex wharf, barrels, and ex discount.

HULL.—March 13.—American turpentine, spot, 56s. per cwt. in barrels ex store.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

KALOROIL BURNERS, LTD., London, N.W. (M., 16/3/40.) March 1, £1,500 debenture to J. A. Amschel, Crowthorne; general charge. *Nil. January 31, 1940.

PLASTILUME PRODUCTS, LTD., High Wycombe, acetate moulding manufacturers. (M., 16/3/40.) March 1, £3,800 debenture to Branch Nominees, Ltd.; general charge. *——. January 2, 1940.

Satisfactions

BAIRD AND TATLOCK (LONDON), LTD., laboratory furnishers. (M.S., 16/3/40.) Satisfaction February 28, of debentures registered May 24, 1932, to the extent of £1,000.

BERKEFELD FILTERS AND WATER SOFTENERS, LTD., Tonbridge. (M.S., 16/3/40.) Satisfactions March 4, £1,100 and £100, parts of £7,000 registered May 5, 1933, and £650 and £50, parts of £1,000 registered May 5, 1933.

JOHN E. WILLIAMS AND CO., LTD., Partington, paint manufacturers. (M.S., 16/3/40.) Satisfaction March 1, of mortgage registered March 12, 1934.

LACRINOID PRODUCTS, LTD., Gidea Park, manufacturers of plastics. (M.S., 16/3/40.) Satisfaction March 1, of mortgage registered March 4, 1939.

Companies Winding-Up

In the matter of AMALGAMATED OXIDES, LTD. (C.W.U., 16/3/40). General meeting of members at 14 George Street, Mansion House, London, E.C.4, Tuesday, April 9th, at 11 a.m.

Companies Winding-Up Voluntarily

In the matter of HYDROGEN, OXYGEN AND PLANT COMPANY, LIMITED (C.W.U.V., 16/3/40) and in the matter of the Companies Act, 1929, general meeting of members at Thames House, Millbank, Westminster, S.W.1, Tuesday, April 16th, 1940, at 3 o'clock.

GREYSTONE LIME SALES, LTD. (C.W.U.V., 16/3/40.) Debts or claims by April 20th, 1940, to Ronald William Leslie Eke, chartered accountant, 4 Southampton Row, W.C.1, liquidator.

GRAYS SODA COMPANY, LTD. (C.W.U.V., 16/3/40.) By reason of its liabilities, Mr. Rowland Hall, chartered accountant, 44 Orsett Road, Grays, appointed liquidator.

BRYMBO SILICA QUARRIES, LTD. (C.W.U.V., 16/3/40.) Debts or claims to J. S. Thomas, Elwy House, King Street, Wrexham, by April 13th, 1940.

Declaration of Solvency Filed

I. G. DYESTUFFS, LTD., Manchester. (D.S.F., 16/3/40.) February 29.

Company News

Boots Pure Drug Co. have declared a dividend for the quarter ending March 31, 1940, of 6 per cent., less tax, to be paid on March 30, 1940.

Benzole and By-Products, Ltd., are making a payment on March 31 of 3 per cent., less tax at 7s., on the 6 per cent. cumulative participating preference shares in respect of the half year ended March 31, 1928.

Associated Portland Cement Manufacturers, Ltd., are paying a final dividend of 7½ per cent., making 15 per cent., against 20 per cent. **British Portland Cement** are paying a final dividend of 12½ per cent., making 20 per cent., compared with 22½ per cent.

Evans Sons Lescher and Webb, Ltd., manufacturing chemists, report a net profit of £30,984 for 1939 (against £20,056 for 1938). The directors propose to pay 1½ year's preference dividend (against one year's), to transfer £15,000 (against £5,000) to reserve, and to carry £12,885 forward (against £11,048).

New Companies Registered

Chromasil, Ltd. (358,914).—Private company. Capital: £1,000 in 1,000 shares of £1 each. To carry on the business of electroplaters, processors of metals and materials including the deposition of metal or other materials by electro, chemical or other actions or methods, etc. Subscribers: W. A. Prestage, 14 Bolton Street, W.1; Paul C. Watt. Secretary: W. A. Prestage.

Chemical Trade Inquiries

Egypt.—The Commercial Secretary at Cairo reports that the Ministry of Public Health, Cairo, is calling for tenders for the supply and delivery of a quantity of various drugs. Tenders should be addressed to the Director of Stores, Ministry of Public Health, Cairo, Egypt, by whom they will be received up to 11 a.m. on April 15, 1940. Local representation is essential. Copies of the specifications, etc., are available for loan. All telephonic communications with the Department of Overseas Trade in regard to this tender should be addressed exclusively to Extension 236. (Ref. T. 16819/40.)

Chemical and Allied Stocks and Shares

IN view of the widespread interest in the new 3 per cent. war loan it is hardly surprising that industrial and kindred sections of the Stock Exchange were less active this week. Nevertheless there were numerous individual features of interest among chemical and allied shares, and in some instances prices moved in favour of holders.

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B. Laporte have been marked up from 65s. to 70s. on favourable views as to dividend prospects despite the larger capital ranking. Cooper McDougall & Robertson ordinary improved from 23s. 9d. to 25s. pending publication of the results, but the quotation did not appear to be tested by much business. Fison Packard were 1s. better at 40s., and Imperial Chemical ordinary, which the market remains hopeful may be kept on an 8 per cent. dividend basis, were unchanged at 32s. 6d. Imperial Smelting held last week's improvement to 13s. 7½d. aided by the clearing of outstanding arrears of dividend on the preference shares. Borax Consolidated at 27s. 9d. were slightly better on the week, and elsewhere British Match moved up from 35s. 6d. to 36s. 6d. On the other hand, Distillers were 2s. down at 65s., and a reduced price was made by Associated Cement, although the "cut" in the dividend was in accordance with general market expectations. British Oxygen, Murex and Turner and Newall reflected the easier tendency on the Stock Exchange in evidence earlier in the week, as did most other widely-held shares.

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Elsewhere, Valor ordinary appreciated to 29s. 3d. on the raising of the dividend from 10 per cent. to 15 per cent. British Glues kept at 6s. 9d. and, awaiting publication of the results, Blythe Colour Works 4s. shares were quoted at 7s. 6d. British Drug Houses were more active, but at 23s. 9d. were the same as a week ago, while in other directions, British Industrial Plastics 2s. shares changed hands around 2s. 1¼d. Barry and Staines were easier at 32s., but Nairn and Greenwich rose to 56s. 3d., and Wall Paper Manufacturers deferred units showed further improvement to 19s. International Paint were 1s. 3d. lower at 80s. following deduction of the dividend from the price, while as compared with a week ago, Pinchin Johnson have gone back from 23s. to 22s. 4½d. United Molasses were a steady feature around 27s. awaiting the next dividend announcement.

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Most iron and steel securities were a few pence down in sympathy with the prevailing market tendency earlier in the week, but Tube Investments were better at 94s. 9d. on expectations that the interim dividend is likely to be maintained, and a small improvement was shown in Baldwins ordinary shares. General Refractories were easier at around 8s., the market being doubtful if dividends will be resumed at this stage, although it is assumed the results are likely to show improvement in earnings.

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Dunlop Rubber fluctuated around 34s. there being conflicting views whether the forthcoming results are likely to keep the distribution at the same rate as for the previous year. Boots Drug were firm at 43s. 3d., and Beechams Pills deferred 8s. 4½d. Triplex Glass were less active, but held their recent improvement to 23s. 9d. United Glass Bottle and Canning Town Glass shares remained steady, awaiting the annual results, due shortly. Textile securities were less active, although Courtaulds subsequently showed a small rally, and better prices also ruled for British Celanese ordinary and preference. "Shell" and other leading oil shares, which usually reflect the general market tendency very closely, were lower, but on balance, however, Burmah Oil at 71s. 3d. were only a few pence down.